

Claims

What is claimed is:

- 1 1. A weak-link mechanism comprising:
2 a stack of a plurality of thin material structures;
3 said stack of structures forming a laminar structure; and
4 each of said stack of structures including multiple weak-link
5 connections providing controllable movements in a plane of the stack and
6 said laminar structure having a set stiffness and stability.
- 1 2. A weak-link mechanism as recited in claim 1 wherein each of
2 said plurality of thin material structures include predetermined locating-holes,
3 said locating-holes used with locating-pins to precisely stack said plurality of
4 thin material structures.
- 1 3. A weak-link mechanism as recited in claim 2 wherein said
2 stack of a plurality of thin material structures are secured together with
3 fasteners received in predefined locating-holes and includes an adhesive
4 coated to sides of said stack, whereby said laminar structure being
5 substantially mechanically equivalent to a single piece mechanism.
- 1 4. A weak-link mechanism as recited in claim 1 wherein each of
2 said plurality of thin material structures is formed of a metal.
- 1 5. A weak-link mechanism as recited in claim 1 wherein each of
2 said plurality of thin material structures is formed of a thin stainless steel
3 sheet.
- 1 6. A weak-link mechanism as recited in claim 1 wherein said
2 multiple weak-link connections include a plurality of connecting links.
- 1 7. A weak-link mechanism as recited in claim 1 wherein said
2 multiple weak-link connections include at least four connecting links.

1 8. A method for producing the redundantly constrained laminar
2 structures as weak-link mechanisms by lithographic techniques comprising
3 the steps of:

4 repeatedly chemically etching a designed pattern with a mask to
5 produce a plurality of individual substantially identical units; and
6 stacking the units together to form the laminar structure.

1 9. A method for producing the redundantly constrained laminar
2 structures as weak-link mechanisms as recited in claim 8 further includes the
3 steps of securing the stacked units together with fasteners received in
4 predefined locating-holes in said units; and applying an adhesive to the
5 sides of the laminar structure to provide the mechanism substantially
6 equivalent to a single piece mechanism.

1 10. A method for producing the redundantly constrained laminar
2 structures as weak-link mechanisms as recited in claim 8 wherein each of
3 said plurality of individual substantially identical units is formed of a thin
4 material.

1 11. A method for producing the redundantly constrained laminar
2 structures as weak-link mechanisms as recited in claim 8 wherein each of
3 said plurality of individual substantially identical units is formed of a thin
4 metal material.

1 12. A method for producing the redundantly constrained laminar
2 structures as weak-link mechanisms as recited in claim 8 wherein the step of
3 repeatedly chemically etching a designed pattern with a mask to produce a
4 plurality of individual substantially identical units includes the step of
5 repeatedly chemically etching a designed pattern having multiple weak-link
6 connections with a mask to produce a plurality of individual substantially
7 identical units.

1 13. A method for producing the redundantly constrained laminar
2 structures as weak-link mechanisms as recited in claim 8 wherein the step of
3 repeatedly chemically etching a designed pattern with a mask to produce a
4 plurality of individual substantially identical units includes the step of
5 repeatedly chemically etching a designed pattern with a mask to produce a
6 set number of individual substantially identical units.

1 14. A method for producing the redundantly constrained laminar
2 structures as weak-link mechanisms as recited in claim 13 wherein said set
3 number of individual substantially identical units is selected for providing a
4 predefined stiffness for the laminar structure.